

Mars Ascent Vehicle Reaction Control System, Phase I

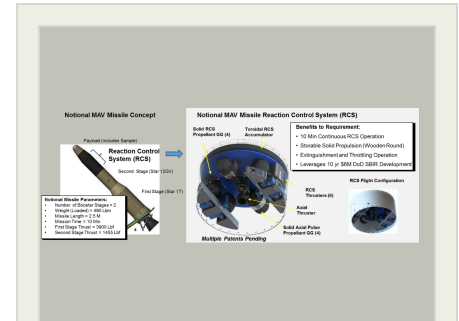
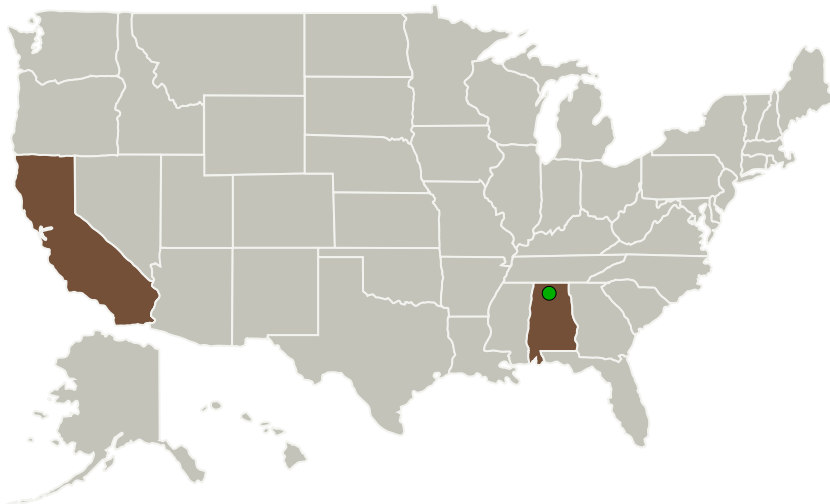
Completed Technology Project (2016 - 2016)



Project Introduction

During this Phase I NASA program, Valley Tech Systems (VTS) will develop an innovative solid Reaction Control System (RCS) architecture concept design that can manage pitch, yaw and roll for the MAV as it ascends, completes stage separation, and performs final maneuvers for linking with the carrier satellite. The innovative design will leverage our advanced, long duration, extinguishable and re-ignitable solid propulsion system, coupled with critical Hot Gas Valve and proportional thruster technologies, to provide an optimal solid rocket motor based control system that acts like a liquid solution. Due to the inherent ability of solid propulsive control systems to accommodate cold space environments, the system requires fewer heaters, therefore improving reliability. Moreover, solid control systems have the ability to meet a higher range of thrust with the same thruster set to minimize inert weight and improve vehicle controllability. The Phase I program will conduct top level system trades, design concept layouts, and perform critical technology testing to yield a smooth and clear transition from the Phase I to a Phase II prototype demonstration program.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Valley Tech Systems, Inc.	Lead Organization	Industry	Folsom, California
● Marshall Space Flight Center (MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

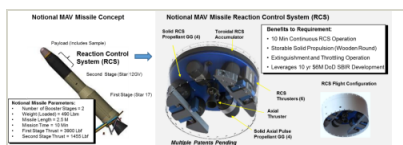
Primary U.S. Work Locations	
Alabama	California

Project Transitions

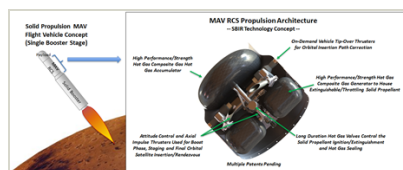
**June 2016:** Project Start**December 2016:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/139568>)

Images

**Briefing Chart Image**

Mars Ascent Vehicle Reaction Control System, Phase I

(<https://techport.nasa.gov/image/128054>)**Final Summary Chart Image**

Mars Ascent Vehicle Reaction Control System, Phase I Project Image

(<https://techport.nasa.gov/image/128919>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Valley Tech Systems, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

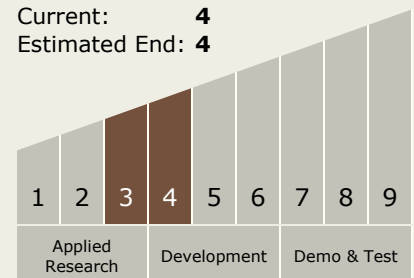
Program Manager:

Carlos Torrez

Principal Investigator:

Russell Carlson

Technology Maturity (TRL)

Start: **3**Current: **4**Estimated End: **4**

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Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.1 Chemical Space Propulsion
 - └ TX01.1.4 Solids

Target Destinations

Earth, The Moon, Others Inside the Solar System, Outside the Solar System, The Sun, Mars